

Appendix MGS-2. Tabulated Version

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Mohave Ground Squirrel Threats Matrix

Threat	Impacts to Habitat			Impacts to MGS	
Each threat is summarized in the table indicated	Human Related			Human Related	Not Human Related
	Lose	Degrade	Fragment		
Urbanization and Energy Devel. (Table 1)	Yes	Yes	Yes	Yes	No
Disease (Table 2)	None Known				
Construction (Table 3)	Yes	Yes	Yes	Yes	No
Off-Highway Vehicles (Table 4)	Yes	Yes	Yes	Yes	No
Landfills and Transfer Stations (Table 5)	Unknown Effect to MGS				
Military Operations (Table 6)	Yes	Yes	Yes	Yes	No
Road/Highway/Railroad (Table 7)	Yes	Yes	Yes	Yes	No
Agriculture (Table 8)	Yes	Yes	Yes	Yes	No
Utility Corridors (Table 9)	Yes	Yes	Yes	Yes	No
Fire (Table 10)	Yes	Yes	Yes	Yes	Lightning
Livestock Grazing (Table 11)	No	Yes	Maybe	Yes	No
Subsidized Predation (Table 12)	Unknown Effect to MGS				
Mineral Development (Table 13)	Yes	Yes	Yes	Yes	No
Non-OHV Recreation (Table 14)	Yes	Yes	Yes	Yes	No
Invasive Weeds (Table 15)	No	Yes	Yes	Yes	No
Garbage & Litter (Table 16)	Unknown Effect to MGS				
Noise (Table 17)	Unknown Effect to MGS				

Threat	Impacts to Habitat			Impacts to MGS	
Commercial Uses (Table 18)	No	Maybe	Maybe	Yes	No
Vandalism (Table 19)	Not Applicable to MGS				
Handling & Manipulation (Table 20)	Not Applicable to MGS				
Wild Horses/Burros (Table 21)	Unknown Effect to MGS				
Drought (Table 22)	No	No	No	No	Yes

Table 1

Threat: Urbanization and Development
Description: Threat is associated with direct losses of the MGS and habitat and indirect, adverse effects resulting from post-construction impacts associated with residential, industrial, and commercial development. The development portion of this threat should be cross-referenced with construction activities because it may occur in remote areas not currently affected by urbanization. Threat also includes solar and geothermal energy development.
Predominant Occurrence: Centered around 9 cities and towns participating in the planning effort (Adelanto, Apple Valley, Barstow, California City, Hesperia, Lancaster, Palmdale, Ridgecrest, and Victorville) and residential communities in unincorporated portions of the participating counties: Kern (Mojave, Boron, Inyokern, Cantil, Randsburg/Johannesburg, etc.), Los Angeles (Lake Los Angeles, Littlerock/Pearblossom, etc.), and San Bernardino (Silver Lakes, Phelan, etc.); military bases also support their own urbanization (particularly Edwards and Fort Irwin), which is discussed under Military Operations. Energy development is centered around solar facilities at Kramer Junction and Harper Lake; geothermal facilities exist in the Coso Range.
<p>Primary Effect: Loss and alteration of suitable MGS habitat; increases other threats in an area (off-road vehicles, landfills, roads and highways, ravens, etc.); increases indirect impacts such as animals lost to dogs, increased trash, etc.</p> <p>Other Effect: Urban development and flood control results in more fugitive dust.</p> <p>Potential Effect and Studies Needed: More data are needed to differentiate between MGS population characteristics (densities, reproduction, etc.) adjacent to and removed from urban centers; study the nature of the urban interface and its effects on MGS ecology. Need to better understand, through scientific study, the effects of a disjunct, remote development on the MGS in adjacent areas.</p>
Goal Statement from Department/Service: Establish guidelines for growth that facilitates long-term conservation of the MGS. Institute a mitigation fee program that partially funds conservation.
Suggested Measures:
1, 200. The evaluators recommend that a conservation area be established for the long-term survival and protection of the MGS. This MGS Conservation Area should include portions of the Fremont-Kramer and Superior-Cronese Tortoise DWMAs and additional, essential habitats located west and north of the Tortoise DWMAs. All other areas would either be managed by the military or be available for incidental take subject to restrictions identified during the planning process.
200. Biological Transition Areas (1) should be established within one mile of the MGS Conservation Area; (2) would be available for incidental take; (3) should function to minimize impacts on the adjacent conservation area, which may call for higher development standards (i.e., more protective mitigation measures) than in other take areas; and (4) may require special review of proposed projects by the Plan's Implementation Team.
200. An area of northeastern Los Angeles County should be designated for no zone change; existing zoning would apply to the area for the term of the Plan (expected to be 30 years). The approximate area (pending public input) is bounded to the west by Big Rock Creek, to the north by Edwards Air Force Base, to the east by the Los Angeles-San Bernardino County line, and to the south by the boundary of the planning area. This area is herein referred to as the "Los Angeles County Zone Maintenance Area."

Threat: Urbanization and Development
200. Trapping studies should be undertaken in the northern portion of Antelope Valley in Kern County. If these studies reveal that MGS occur, existing zoning should be maintained for the remaining term of the Plan. If the genetic make-up is determined to be significantly different from that of other MGS in the planning area, the area should be considered for conservation-area status or other protection more restrictive than that provided by existing zoning. Herein, this area (yet to be delineated) is referred to as the “Kern County Study Area.”
3. & 4. The public needs to decide on an appropriate fee structure. Evaluators suggest that fees be relatively higher in the MGS Conservation Area and relatively lower in Biological Transition Areas and other take areas.
5. Identify construction types and locations that would be exempt from fees or other mitigation; consider single-family scenario versus commercial, industrial, high density development (determine dichotomy or variable approach to fee requirements).
6. Discuss mechanism for other funding sources, so that fees are not only based on new development and ground disturbance.
7. The Plan could develop a curriculum on environmental education (or identify agencies to do this) that can be presented to school districts.
9. & 10. Multiple Use Classes identified in the CDCA Plan should be Class L or C (existing Wilderness) in the MGS Conservation Area. Recommend that the MGS Conservation Area should be designated as an Area of Critical Environmental Concern (ACEC) for protection of the squirrel.

Table 2

Threat: Disease
Description: Upper Respiratory Tract Disease (URTD) and cutaneous dyskeratosis are two diseases identified for tortoises that are not applicable to the MGS. No diseases are currently known to affect the MGS.
Predominant Occurrence: None.
Primary Effect: None. Other Effect: None. Potential Effect and Studies Needed: None.
Goal Statement from Department/Service: Minimize opportunities to spread the disease and facilitate research to find an answer. (Not applicable to MGS).
Suggested Measures: None

Table 3

Threat: Construction Activities
Description: This threat refers specifically to the direct impacts occurring at the time facilities, infrastructure, etc. are constructed; urbanization and habitat fragmentation are indirect impacts that result from construction (see discussion under urbanization/development).
Predominant Occurrence: May occur throughout the planning area, and particularly adjacent to urban centers (Barstow, Palmdale, Victorville, etc.), in scattered rural areas (Lake Los Angeles, Phelan, etc.), along utility (including water, electrical, fiber optic, etc.) and transportation corridors, at active mine sites, etc.
Primary Effect: Direct loss of habitat from the construction site; degrades habitat adjacent to the construction site, including damage to soil and to cryptobiotic crusts. Other Effect: May entrap MGS in pits, trenches, etc.; creates fugitive dust. Potential Effect and Studies Needed: Little data exist on the extent of the impact (i.e., the numbers of MGS and occupied habitat that have been lost).
Goal Statement from Department/Service: Minimize disturbance and loss of habitat and incidental take of the MGS.
Suggested Measures:
18., 19., 21., & 23. Under the proposed conservation strategy, the Department would not require Cumulative Human Impact Evaluation Forms (CHIEFs) to be completed, nor would trapping be required. A brief site visit to determine if compensable habitat would be lost to a given project may be appropriate.
25. Discuss mitigation and compensation strategies for projects in all management areas that would discourage but not prevent development inside the MGS Conservation Area. One example may be variable compensation: mitigate 1:1 outside the MGS Conservation Area and 10:1 inside.
26. Consider dichotomy between permanent impacts (solar power plant, facilities development, etc.) versus intrusive but temporary impacts (pipelines, fiber optic cable, etc.). Pipelines within the MGS Conservation Area should be revegetated; revegetation is recommended within Biological Transition Areas but not in other take areas.
27. Rather than focus on what will and will not be allowed, define general criteria: permanent versus temporary impacts, single time impacts (e.g., pipeline booster station) versus ongoing impacts (solar plant employing 100 workers) and discuss management prescriptions that would apply.
28. Develop standard mitigation measures for ground-disturbing construction projects, such as (a) pipelines, (b) parcel development, (c) mines, (d) highway construction and maintenance, etc. Plan would develop standard measures for ground-disturbing construction projects, such as (a) pipelines, (b) parcel development, (c) mines, etc.
29. The West Mojave Implementation Team should be created to assist in carrying out project-specific measures for projects in the MGS Biological Transition Areas to ensure that the project's indirect impacts do not adversely affect protection of the MGS in adjacent conservation areas.
30. The Service plans on providing at least two full-time people stationed in Barstow to implement the Plan and assist with and monitor on-the-ground compliance.
31. The Department will consider the feasibility of providing permanent, dedicated position(s) towards implementation of the Plan and on-the-ground compliance.

Table 4

Threat: Off-Highway Vehicles
Description: Except in Bureau of Land Management “Open Areas” where vehicles are not restricted to roads, a major effect is travel off of established roadways (cross-country travel).
Predominant Occurrence: Cross-country travel is generally more prevalent in Bureau Open Areas, including Spangler Hills, El Mirage, and Jawbone Open Areas, but is also in adjacent areas (as observed during 1998 and 1999 tortoise surveys). Typically more prevalent adjacent to towns, cities, and unincorporated communities than in undeveloped, remote areas. In general, cross-country travel is more prevalent in flat to moderately sloping terrain than in rocky, mountainous areas (excepting hill-climb areas, where the impacts can be just as prevalent).
<p>Primary Effect: Vehicles may crush the MGS (LaRue, pers. obs., 1998) and its burrows; alters habitats by compacting soils, which reduces water absorption, increases surface temperatures, and may result in soils where burrowing is difficult or impossible; compaction, which causes reduced water infiltration, is less pronounced in very sandy substrates, and wetter substrates are more likely to be impacted than dry ones; destroys vegetation (which can result in increased soil surface temperatures, increased vulnerability to predation, and affect preferred annual plant forage); reduces plant density, biomass, and cover; facilitates the spread of non-native weeds, particularly split grass (<i>Schismus</i> sp.); increases erosion (the main effect of wind erosion is removal of nutrients rather than reduction in soil depth); very light, non-repeated vehicle use probably has little long-term impact.</p> <p>Other Effect: Destroys cryptobiotic crusts, which are important in reducing erosion, controlling water infiltration, regulating soil temperatures, fixing atmospheric nitrogen, pre-adapting soils for plant growth, and accumulating organic matter; provides access for illegal activities such as dumping, shooting (where prohibited), etc.</p> <p>Potential Effect and Studies Needed: Likely introduces toxins from exhaust; increases fugitive dust, which may affect the MGS; studies should consider MGS densities inside and outside open areas to quantify impacts; document effects of light OHV use on and off existing roads; document effects of camp sites on adjacent areas (more unleashed dogs, more trash and litter, etc.).</p>
Goal Statement from Department/Service: In the MGS Conservation Area, minimize creation of new roads and trails; rehabilitate closed routes; and enforce use of designated route network. Re-evaluate “best boundaries” of existing OHV management areas to enhance recreation <i>and</i> MGS conservation.
Suggested Measures:
32. Consider impacts of applicable open areas, which include El Mirage, Spangler Hills, and Jawbone Canyon, and determine measures to minimize impacts.
36. Increase the frequency of BLM ranger patrols in the MGS Conservation Area at sites where prohibited activities are identified.
37. See “non-OHV recreation” for discussion relative to vehicle camping.
38. No vehicles should be allowed off designated routes in the MGS Conservation Area.
39. No racing should be allowed in the MGS Conservation Area.
40. Dual Sport events would be allowed year-round in non-MGS Conservation Areas, and only seasonally in the MGS Conservation Area; Dual Sport events in the MGS Conservation Area would be allowed in the period of September through December only; the prescriptions given in the biological opinion for tortoises should apply.

Threat: Off-Highway Vehicles
41. Limited speed travel on designated, signed routes should be allowed in the MGS Conservation Area.
42. Closure of routes as determined for route designation should be implemented.
44. Work with OHV groups (AMA, CORVA, etc.) to establish meaningful education brochures and mechanisms to discourage cross-country travel.
45. Travel in washes in the MGS Conservation Area should only be allowed in those washes that are signed as “open.”

Table 5

Threat: Landfills and Transfer Stations
Description: Threat considers the direct, but mostly indirect, effects of landfills and landfill practices on MGS habitat and populations.
Predominant Occurrence: San Bernardino County (Barstow, Phelan, Hesperia, Victorville, etc.); Kern County (Ridgecrest, Mojave, etc.); Edwards Air Force Base, etc.
<p>Primary Effect: Proliferation of predatory raven populations is a documented threat to juvenile tortoises but not the MGS.</p> <p>Other Effect: Loss of habitat; spread of garbage; introduction of toxic materials; increased mortality along landfill access roads; increased introduction of particulate matter into the atmosphere.</p> <p>Potential Effect and Studies Needed: Long- and short-term effect on the MGS and its habitat.</p>
Goal Statement from Department/Service: Minimize availability of food provided at landfills to minimize increase of ravens in the West Mojave Planning Area. (Not applicable to the MGS).
Suggested Measures: None

Table 6

Threat: Military Operations
Description: Includes operations at Edwards Air Force Base, China Lake Naval Air Weapons Station, and Fort Irwin and the development of support communities outside the bases, including Ridgecrest, Rosamond, Barstow, and others.
Predominant Occurrence: At the three bases listed above and, historically, in areas on which tank maneuvers occurred (estimated to have affected more than 17,500 square miles within the planning area and to the east and southeast in the 1940's and in 1964).
<p>Primary Effect: Loss, degradation, and fragmentation of habitat due to construction, operation, and maintenance of bases and support facilities; development of support communities, including urban, industrial, and commercial facilities; field maneuvers, including tank traffic (671 square miles at Fort Irwin); littering with unexploded ordnance, shell casings, and ration cans; and distribution of chemicals.</p> <p>Other Effect: Little documentation was found to indicate impacts of air-to-ground bombing and static testing of ordinance, although impacts are likely.</p> <p>Potential Effect and Studies Needed: Potential effects of military-associated chemicals (jet fuel, pentaborane, beryllium, etc.) on the MGS.</p>
Goal Statement from Department/Service: Establish guidelines for operations that are compatible with conservation of the MGS. Recognize management area boundaries within each base that compliment those outside.
Suggested Measures:
53. Request (with help from the evaluators, if asked) military bases to provide information (including management zone boundaries) for analogous management areas on Edwards Air Force Base, China Lake Naval Air Weapons Station, and Fort Irwin (including Goldstone Deep Space Communications Complex) with those designated outside; (b) consider areas included in China Lake's biological opinion; (c) consider Edwards' INRMP and enforce biological opinions; etc.
54. Applicable management prescriptions given in military INRMPs, Biological Opinions, etc. that would result in the conservation of MGS should be adopted and endorsed by the West Mojave Plan; specific management zones have been delineated for Edwards and China Lake.
55. This prescription is covered by 53. & 54., above.
56. Develop specific mitigation measures for specific project types (pipelines, road-widening, etc.) that would be used inside and outside the bases.

Table 7

Threat: Roads, Highways, and Railroads
Description: Includes freeways, state routes, paved surface roads, and railroads through relatively undeveloped areas. This threat does not include dirt roads, which are addressed in the off-highway vehicle section.
Predominant Occurrence: Freeways in the planning area include I-15 and I-40; Highways include State Routes 395, 58, 14, 18, 138, and National Trails Highway; paved surface roads bisecting relatively undeveloped areas are the most widespread of the improved roads and include, among others: El Mirage Road, Shadow Mountain Road, Fort Irwin Road, Harper Lake Road, Neuralia Road, etc. Major railroads are adjacent to SR 58 and I-15, along the Mojave River from the Cajon Pass to Barstow, and adjacent to SR 138 and 14 between Cajon Pass and Mojave, etc.
<p>Primary Effect: MGS are crushed on roads; MGS habitat on a regional scale is fragmented; habitat is lost to road widening.</p> <p>Other Effect: Roads serve as dispersal corridors for non-native weeds, development, and recreation; the band of lush vegetation along roads may provide food but may also attract the MGS into harm's way, where they may be crushed; in the planning area, fires are more prevalent along paved roads than in undeveloped, remote areas.</p> <p>Potential Effect and Studies Needed: Noise and other factors have an unknown but potential adverse effect on the MGS in adjacent areas; railroad berms that are not covered by gravel may provide burrowing opportunities; study the need/effectiveness of fencing to reduce impacts to MGS; studies to determine the ideal spacing and design of under-crossings to facilitate MGS movement.</p>
Goal Statement from Department/Service: Minimize the direct and indirect impacts of paved roads and railroads on the MGS and its habitat.
Suggested Measures: None. There is no evidence to suggest that the MGS would benefit from fencing roads; they more than likely would climb the fences. So, none of the fencing measures identified for tortoise protection is expected to benefit the MGS.

Table 8

Threat: Agriculture
Description: Consists mostly of active agriculture (alfalfa and grain production) although many fallow fields occur that may be marginal habitat for the MGS.
Predominant Occurrence: Los Angeles County, Lancaster, along Mojave River, and San Bernardino County (Harper Dry Lake, Hinkley, etc.).
<p>Primary Effect: Habitat loss through discing and plowing of new, undeveloped areas.</p> <p>Other Effect: Introduces invasive weeds; produces fugitive dust.</p> <p>Potential Effect and Studies Needed: Potentially harmful effects of pesticides, herbicides, and other agricultural chemicals; somewhat minimized by current practice of direct application rather than aerial application.</p>
Goal Statement from Department/Service: Establish guidelines for agriculture that are compatible with conservation of the MGS and its habitats. Institute a mitigation fee program that partially funds conservation.
Suggested Measures:
79. Under the proposed conservation strategy, the Department would not require Cumulative Human Impact Evaluation Forms (CHIEFs) to be completed, nor would trapping be required. A brief site visit to determine if compensable habitat would be lost to a given project may be appropriate. (This prescription is taken, verbatim, from prescriptions 5., 18., 19., 21., & 23.).
80. Loss of native habitat to new agriculture should be compensated by paying appropriate fees, restoring appropriate agricultural areas, or implementing other, appropriate compensation measures. Recommend discouraging new agriculture in the MGS Conservation Area.

Table 9

Threat: Utility Corridors
Description: Includes impacts associated with construction, operation, and maintenance of linear projects (excluding roads) such as gas and water pipelines, transmission and distribution lines, and fiber optic cables.
Predominant Occurrence: Most utility corridors follow highways and roads (transmission lines and pipelines along SR 395, fiber optic cable installed in 1997-98 along surface roads between Lancaster and Needles) or along existing, dirt roads (e.g., 77-mile Mojave River Pipeline from Baldy Mesa to Daggett.).
Primary Effect: Habitat loss during construction and habitat degradation associated with maintenance and unauthorized public use are main impacts. Other Effect: Construction activities create erosion and dust; fragments MGS populations on a regional scale. Potential Effect and Studies Needed: The extent of the indirect impact is not well studied; continue research on the efficacy of revegetating pipeline alignments.
Goal Statement from Department/Service: Minimize direct impacts associated with construction and maintenance of utility corridors and indirect impacts associated with their presence (i.e., habitat fragmentation, support of non-native vegetation, etc.).
Suggested Measures:
82. Contingent corridors, identified in the CDCA Plan, should not be activated within the MGS Conservation Area.
86. Within the MGS Conservation Area, management prescriptions should be applied equally on public and private lands (e.g., if required, revegetation would occur on both public and private portions of a given pipeline).
87. Maintenance of existing utilities should be allowed and should require minimization of impacts to the MGS and its habitats; all maintenance activities should remain on existing access roads except for the point location of maintenance-related disturbance.
88. Evaluators recommend supporting the CDCA designation and use restrictions for utility corridors (Reflects Current Management).
89. All pipeline alignments within the MGS Conservation Area should be revegetated; narrowing the ROW impact should be required.
90. Within existing corridors, attempt to use areas that are already disturbed rather than disturbing new areas within the two to three mile corridor.

Table 10

Threat: Fire
Description: Refers to fire caused by human activity; not inclusive of fires caused by lightning, which are considered rare in the planning area.
Predominant Occurrence: May occur throughout the planning area, but particularly associated with paved and (to a lesser extent) unpaved roads; more prevalent now due to proliferation of non-native plants, particularly grasses.
<p>Primary Effect: Direct mortality to the MGS is suspected; removes forage plants, facilitates proliferation of non-native plants; may change dominant shrub type (low resulting levels of stump sprouting in creosote bush), leading to type conversion.</p> <p>Other Effect: Fragments habitat by creating unsuitable patches.</p> <p>Potential Effect and Studies Needed: May ultimately stimulate plant growth and increase nutrient cycling; use of fire to control weeds.</p>
Goal Statement from Department/Service: Minimize disturbance related to fires and suppression.
Suggested Measures:
91. Wildland fire management should be allowed in all management areas.
92. Fire suppression should be a mix of aerial attack with fire retardant, crews using hand tools to create firebreaks, and mobile attack engines limited to public roads and designated open routes.
93. Use of earth-moving equipment or vehicle travel off public roads and designated open routes should not be allowed except in critical situations where needed to protect life and property.
94. Incoming fire crews unfamiliar with habitat protection should receive an awareness program to minimize impacts.
95. Post-suppression mitigation should include rehabilitation of firebreaks and other ground disturbances using methods compatible with management goals.
NA: Other local consultation completed 96. Call Todd Esque about effects of fire, management, etc.

Table 11

Threat: Livestock Grazing
Description: Includes effects of sheep and cattle grazing on suitable MGS habitat and populations.
Predominant Occurrence: <u>Cattle Allotments:</u> Harper Dry Lake, Pilot Knob, El Paso Mountain, Walker Pass, Rudnick Common, Tunawee, Hansen Common, etc. <u>Sheep Allotments:</u> Cantil Common, Shadow Mountain, etc.
<p>Primary Effect: Potential crushing/trampling of burrows; destruction of vegetation; alteration of soil (compaction, erosion, decreasing infiltration, etc.); introduction of invasive weeds; impacts are greatest in the immediate vicinity of water sources; during years of reduced annual plant biomass (less than 100-150 lbs/acre) cattle impacts to the MGS are likely greatest; there is no evidence that the MGS is benefitted by cattle grazing.</p> <p>Other Effect: Cattle droppings do not contribute to the overall nitrogen content of the soil; alteration of soil temperature due to changes in vegetation structure; competition for food.</p> <p>Potential Effect and Studies Needed: Augmentation of forage due to livestock droppings (is of limited value due to the increased trampling that is associated with fecal accumulations) and stimulation of growth and nutritive value of forage plants; effects of grazing on MGS survival and reproductive success; need to perform studies (or analyze Dave Sjaastad's existing data) on the annual biomass before and after an area has been grazed by sheep; study the benefits associated with removing cattle from the Pilot Knob allotment; establish MGS monitoring studies throughout the southern portions of its range to determine conservation areas and facilitate adaptive management.</p>
Goal Statement from Department/Service: Establish and implement grazing management that is consistent with MGS conservation.
Suggested Measures:
<p>97, 200. Measures applied by the CDCA Plan to govern sheep grazing within Tortoise habitat should also be applied throughout the MGS Conservation Area. These include:</p> <ul style="list-style-type: none"> ● Allotments classified as ephemeral sheep operations will be managed under ephemeral authorizations. Authorizations will be issued after an interdisciplinary team, along with grazing operators involved, make a field examination of the allotment and determine whether production of 200 pounds per acre of dry weight will be available, except in the MGS Conservation Area, where a 350 pounds-per-acre requirement is specified. ● The allowable use would not exceed that which would leave an average of 350 pounds residual forage within the MGS Conservation Area at the end of the growing season. ● Turnout dates for sheep on ephemeral forage within the MGS Conservation Area will be determined by consultation with the grazing operator, BLM range conservationist, BLM wildlife biologist, and county agricultural extension agent. Turnout dates will be based on the emergence of the MGS (generally in late January or February) and availability of a minimum of 350 pounds per acre dry weight ephemeral forage. ● Grazing will be restricted to one pass by sheep in the MGS Conservation Area. Concentration areas for livestock will be designated, such as watering sites and

Threat: Livestock Grazing
<p>sheep bedding areas.</p> <p>When monitoring studies on key areas show over 50 percent use of key perennial species, [for the time being,], appropriate adjustments will be made to bring the use within carrying capacity. Initially, “key perennial species” will include winter fat (<i>Krascheninnikovia lanata</i>), spiny hopsage (<i>Grayia spinosa</i>) and saltbush species (<i>Atriplex</i> spp.). These are based on the research of Dr. Phil Leitner and may need to be changed under an adaptive management program if other perennial species are identified as being as important to MGS foraging ecology.</p> <p>If BLM monitoring studies indicate that range conditions are not meeting standards, consider retiring ephemeral allotments covering those non-compliance areas during an <i>El Niño</i> event and subsequent year(s) to allow for recruitment of new perennial plants into that area.</p>
98. The Plan should provide a mechanism for voluntary retirement of cattle allotments throughout the range of the MGS.
102. Cattle grazing may occur in the MGS Conservation Area with adaptive prescriptions that protect the MGS and its habitats (e.g., variable management during drought years).
103. Supplemental feed (hay, alfalfa, etc.) and food supplements (nitrogen supplements like molasses) should not be allowed in the MGS Conservation Area.
104. The rancher should contact the BLM for range improvements requiring off-road use of equipment; routine maintenance should be restricted to existing roads; unreported off-road travel should be authorized to remove cattle carcasses (Reflects Current Management).
105. Herding of cattle should be minimized, and cattle allowed to disperse throughout the area of use. Water sources should be sparsely distributed and of sufficient number to minimize focused impacts.

Table 12

Threat: Subsidized Predation
Description: Refers to predation of tortoises by coyotes, feral dogs, and common ravens. (Not considered a threat to the MGS)
Predominant Occurrence: Predation by coyotes and feral dogs may be expected to be higher in areas adjacent to residential development.
Primary Effect: No documentation is available to indicate that MGS suffer from raven predation (as is well documented for tortoises). Other Effect: Not specifically discussed. Potential Effect and Studies Needed: Desert-wide studies to quantify the impacts of human-subsidized predation on MGS populations have not been completed.
Goal Statement from Department/Service: Minimize/reduce subsidized predators from habitats managed for the MGS.
Suggested Measures:
108. Dogs off-leash accompanied by their owners would be allowed in all areas.

Table 13

Threat: Mineral Development
Description: Refers to the exploration, development, and operation of mines.
Predominant Occurrence: The extent of the affected area is not well documented.
<p>Primary Effect: May destroy habitat and crush the MGS during off-road travel to explore and access sites; direct loss of habitat to miscellaneous construction, leachate ponds, tailings, rubbish, etc.; introduces toxins; may encourage other development to support operations.</p> <p>Other Effect: Indirect loss of habitat, fragmentation, and effects associated with access roads are associated with construction of support facilities.</p> <p>Potential Effect and Studies Needed: Few data exist on the effects of mineral development on MGS: determine best reclamation and revegetation methods.</p>
Goal Statement from Department/Service: Minimize or eliminate adverse effects to the MGS Conservation Area.
Suggested Measures:
115. Applicable measures given in “construction activities” should be moved to this section for ground-disturbing activities. See prescriptions 28. and 81.
116. In the MGS Conservation Area, restoration under SMARA or other applicable laws should strive to reclaim lands to constitute MGS habitat as a goal.
118. Identify areas for site-specific withdrawals from mineral entry to facilitate MGS conservation. If studies reveal an MGS source area that has been identified for mineral extraction but is not patented, consider mineral withdrawal for that specific location. Access for mineral development should be limited to designated open routes. Alternatively, all exploratory activities should be monitored to minimize impacts to the vegetation community. Working with the monitor, the project proponent should eliminate any roads or cross country tracks that result from exploratory activities. The goal is to eliminate these tracks so that they are not used for future travel through the area. (118, 200)

Table 14

Threat: Non-off-highway Vehicle Recreation
Description: Includes camping, hunting, general shooting, guzzlers, nature study, rock collecting, sight-seeing, etc.
Predominant Occurrence: Expected to occur throughout the planning area and be concentrated in certain areas, such as popular camping locations (e.g., Red Rock Canyon State Park, Owl Canyon), well-known attractions (e.g., Inscription Canyon at Superior Valley), springs and oases, popular rockhound sites (e.g., north of Harper Dry Lake), and traditional hunting areas (e.g., Red Mountain).
Primary Effect: Unknown. Other Effect: Unknown. Potential Effect and Studies Needed: Potential impacts include loss of habitat to campground and facilities construction; increased road kills; etc.
Goal Statement from Department/Service: Minimize habitat disturbance and MGS mortality associated with non-OHV recreation..
Suggested Measures:
120, 200. Inside MGS Conservation Area, all vehicle camping, stopping, and parking should be restricted to previously disturbed areas within 50 feet of existing roads.
122. Hunting should be allowed and regulated by current legislation.
124. Non-consumptive recreation (e.g., hiking, birdwatching, horseback riding, and photography) should be allowed within the MGS Conservation Area.
125. Consider signing pertinent areas along the boundary of the MGS Conservation Area.

Table 15

Threat: Invasive Weeds
Description: Threat includes deleterious effects of native and non-native weeds on MGS habitat and populations.
Predominant Occurrence: Weeds are generally more prevalent in areas that have been disturbed by fire, military maneuvers, grazing, agriculture, off-highway vehicle traffic, right-of-way development, residential development, and other ground disturbing activities. The most common invasive weeds include red-stemmed filaree (<i>Erodium cicutarium</i>), split grass (<i>Schismus</i> sp.), rancher's fiddleneck (<i>Amsinckia tessellata</i>), Russian thistle (<i>Salsola tragus</i>), and some mustard species (<i>Brassica</i> ssp., <i>Descurania</i> ssp., <i>Sisymbrium</i> ssp.).
<p>Primary Effect: May reduce the availability of native forage; facilitates the spread and increases the intensity of wildfires; alters the structural integrity of the physical environment, including ambient and soil temperatures and removing cover.</p> <p>Other Effect: May be nutritionally inferior to native species.</p> <p>Potential Effect and Studies Needed: Location and abundance of non-native species within the planning area; potentially adverse effects of non-native plants on survival and reproductive success of the MGS.</p>
Goal Statement from Department/Service: Minimize opportunities to spread weeds.
Suggested Measures:
126. Invasive weeds should not be used in landscaping adjacent to the MGS Conservation Area; i.e., African daisies along roadways.
127. Management prescriptions designed to minimize impacts associated with other threats, particularly OHV, grazing, fire, construction, etc. will assist in minimizing continued support of non-native species.

Table 16

Threat: Garbage and Litter
Description: Refers to illegal dumping of plant materials, construction materials, abandoned cars and appliances, household refuse, hazardous wastes (motor oil, household chemicals, etc.); also, litter and other windblown trash from illegal dumping and other sources (materials discarded from vehicles, etc.).
Predominant Occurrence: May occur throughout the planning area, but generally more common inside and within several miles of urban areas; often common in the vicinity of authorized landfills; litter is abundant along paved and unpaved roads.
Primary Effect: Negative effects more associated with the tortoise than the MGS. Other Effect: Unknown. Potential Effect and Studies Needed: None identified.
Goal Statement from Department/Service: Reduce amounts of litter/garbage.
Suggested Measures: None

Table 17

Threat: Noise
Predominant Occurrence: Associated with roads, military bases, fly zones; etc.
Primary Effect: None identified. Other Effect: None identified. Potential Effect and Studies Needed: No evidence (study) indicating effects of OHV noise on the MGS; sustained noises (not likely in most areas) may mask MGS auditory communication, maybe along roads and railroads; no evidence that sonic booms affect the MGS.
Goal Statement from Department/Service: None identified.
Suggested Measures: None

Table 18

Threat: Commercial Use
Description: Regards harvesting plants, commercial filming, and other threats not previously covered (e.g., mining, ranching, etc.).
Predominant Occurrence: May occur throughout the planning area, and for certain species occur only in particular areas (harvesting of <i>Yucca shidigera</i> and various cacti species).
<p>Primary Effect: For particular species (none of which is a targeted special-status species being considered by the West Mojave Plan), harvesting would result in their removal from native habitats. Unrestricted travel cross-country or off existing roads may adversely affect the MGS and other species during filming activities.</p> <p>Other Effect: Incidental effects on targeted species, such as the MGS, may occur depending on collection methods; driving cross-country may directly affect the MGS and its burrows.</p> <p>Potential Effect and Studies Needed: None identified.</p>
Goal Statement from Department/Service: Ensure that harvesting does not alter the basic structure of the plant community; minimize adverse effects to the MGS and its habitats.
Suggested Measures:
131. Cross-country vehicle travel should not be allowed for commercial activities in the MGS Conservation Area.
132. Commercial activities, such as commercial filming within MGS habitat, that result in ground disturbance or adverse effects may be allowed in the MGS Conservation Area but only if construction measures applicable to temporary construction impacts are applied. Plant harvesting in MGS habitat should not be allowed within the MGS Conservation Area.

Table 19

Threat: Vandalism
Description: Refers to the purposeful killing or maiming of tortoises and illegal collection. (Not considered a threat to the MGS).
Predominant Occurrence: None relative to the MGS.
Primary Effect: Not applicable. Other Effect: Not applicable. Potential Effect and Studies Needed: Not applicable.
Goal Statement from Department/Service: Eliminate killing, maiming, etc., and collection of tortoises. (None relative to the MGS).
Suggested Measures: None

Table 20

Threat: Handling and Manipulation
Description: Includes picking up wild tortoises, relocating them off construction sites, releasing captive tortoises, and manipulation for scientific experimentation. (Not a threat relative to the MGS).
Predominant Occurrence: Not applicable.
Primary Effect: Not applicable. Other Effect: Not applicable. Potential Effect and Studies Needed: Not applicable.
Goal Statement from Department/Service: To provide guidance to the general public and professionals on when, how, why, and where to handle tortoises. (Not applicable to MGS.)
Suggested Measures: None

Table 21

Threat: Wild Horses and Burros
Description: Wild horses and burros have been mostly, if not completely, eliminated from the planning area.
Predominant Occurrence: None; wild horses and burros have recently been re moved from the Kramer Hills area and China Lake Naval Air Weapons Station, including the Centennial Range on the main base and Slate Range on Mojave B Range. Still occurs in the northern portions of China Lake.
Primary Effect: Likely habitat alteration through soil compaction and vegetation change, though not reported in any materials reviewed for this analysis. Other Effect: None identified. Potential Effect and Studies Needed: No studies were found quantifying the impact of burros on MGS and their habitat; expect that so few burros occur in the planning area that this is not a high priority research item.
Goal Statement from Department/Service: Not considered a problem relative to the MGS.
Suggested Measures:
200. China Lake's environmental managers are working with the Bureau to remove burros from the last places they occur on the installation. Such removal will likely benefit the MGS where it occurs.

Table 22

Threat: Drought
Predominant Occurrence: When present, affects entire planning area.
<p>Primary Effect: May be responsible for dehydration and starvation of adult MGS; the MGS foregoes reproduction during drought periods, which could result in local extinctions.</p> <p>Other Effect: None identified.</p> <p>Potential Effect and Studies Needed: Effects of drought on MGS ecology are relatively well studied in the northwestern portion of its range (Coso Range) but not elsewhere within the planning area. Dr. Leitner's, or similar studies, need to be performed in the southern and central range of the MGS.</p>
Goal Statement from Department/Service: During drought, minimize stress and other adverse effects to the MGS that may not occur under normal conditions.
Suggested Measures:
<p>145, 200. Focused MGS trapping studies should be performed along the northern boundary of the planning area in the Kern County portion of the Antelope Valley. Other field research designed to address questions regarding the biology of native species or regarding impacts of land-use practices on these species should be allowed in the MGS Conservation Area.</p>